

The opinion in support of the decision being entered today is not binding
precedent of the Board.

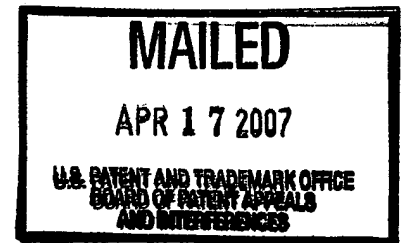
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHIP et al.¹

Appeal No. 2007-0562
Application No. 09/993,745

ON BRIEF



Before GRON, LANE, and NAGUMO, Administrative Patent Judges.

LANE, Administrative Patent Judge.

DECISION ON APPEAL-37 CFR § 41.50

I. Statement of the case

The examiner has twice rejected claims 1-10, all the pending claims of the application, under 35 USC §103(a) and 35 USC §112, ¶ 1. Appellants appeal as to each rejection. 35 USC §§ 134(a); 6(b). We affirm the rejection under 35 USC §103(a) and reverse the rejection under 35 USC §112, ¶ 1.

II. Findings of fact

The record supports the following findings of fact as well as any other findings of fact set forth in the decision by a preponderance of the evidence.

- 1) Original application 09/993,745 was filed on 14 November 2001.

¹ The named inventors are Gerald Chip and Chris Wilkey and the real party in interest is said to be Omnova Solutions, Inc. (Appeal Brief at 2).

1 2) According to the specification of the application, "[t]his invention relates to
2 a modified latex binder [and] [m]ore particularly ... to a modified copolymer
3 latex binder used in the preparation of flexible nonwoven fiber mats that
4 are useful in the roofing industry." (Specification at 1:4-6).

5 3) Further the specification states that "it has been found that by modifying
6 the copolymer latex emulsion with a urea-formaldehyde [UF] resin a
7 minimum of 15% improvement in the hot dry elongation values is achieved
8 ... sufficient to allow an increase in production line speed by 10% or more
9 in the formation of the flexible nonwoven fiber mats." (Specification at
10 1:20-24).

11 4) Claim 1, reproduced below, is representative of claims 1-10:

12 A modified copolymer latex binder for polyester fibers
13 comprising at least 10wt%-90wt% styrene butadiene and a
14 corresponding amount of 90wt-10wt% urea-formaldehyde wherein
15 the urea-formaldehyde resin is prepared by adding a short-stop
16 agent to the urea-formaldehyde resin reaction system.

17
18 5) Regarding the short-stop agent, the specification states the following:

19 The urea-formaldehyde resin of the binder composition is a
20 urea-formaldehyde resin prepared by termination by adding a short-
21 stop agent of a type well known in the art to the reaction system
22 after a predetermined period of time. The polymerization of the
23 urea-formaldehyde resin is terminated by adding the short-stop
24 agent to the reaction system after a predetermined period of
25 time.... The urea-formaldehyde resin is commercially available,
26 from Dynea Oy of Helsinki, Finland. In a preferred embodiment,
27 the urea-formaldehyde resin is sold under the designation "2023-
28 30" by Dynea Oy of Helsinki, Finland.

29
30 (Specification at 7:18-28).

31
32 6) Table 1 of example 1 is said to report the "stability" of "emulsion 1", said to
33 have "a composition of 70 parts dry styrene/butadiene [SB] emulsion and
34 30 parts dry UF/resin and [a] ... solid content of 45%, viscosity of less than

1 250 cps and a pH of 7.5 adjusted with TEA [triethanolamine]."
2 (Specification at 10:27-11:11).
3
4 7) According to the specification, "stability is measured by viscosity change,
5 pH change and absence of coagulum" and "[t]hree month stability means
6 that the emulsion has not change [sic-changed] in viscosity, pH may or
7 may not have changed by much and the polymer is free of coagulum."
8 (Specification at 11:22-25).

9 8) Table 1 is reproduced below:
10

Emulsion 1	pH adjusted with	Stability Room Temp.	Stability at 35 Degrees C.
With Dynea UF resin	TEA	3 months	1 month
	Ammonia	14 days	7 days
With other UF resin	TEA	30 days	14 days
	Ammonia	14 days	14 days

11
12
13 9) The "other UF resin" referred to in Table 1 is not identified.
14 10) Table 2 is said to report "tensile, tear and % strain values" of polyester
15 mats saturated with:
16 (a) four different emulsions, each of which is said to have been
17 prepared using SB latex and a UF resin which is resin 2023-30
18 manufactured by Dynea Corp,
19 (b) latex (i.e., SB) only.
20 (Specification at 10:17-21 and 11:3-18).

- 1 11) Table 2 does not show results from an emulsion that was prepared using
2 a resin other than resin 2023-30 by Dynea.
- 3 12) The examiner rejects claims 1-10 under 35 USC 103(a) as unpatentable
4 over O'Connor.²
- 5 13) O'Connor discloses a "reinforcing composite for bituminous roofing
6 membranes...made by laminating fiberglass and polyester mats and
7 scrims coated with selected adhesives." (O'Connor abstract).
- 8 14) O'Connor states that the "invention comprises making a single reinforcing
9 composition of at least one layer of fiberglass, at least one layer of
10 polyester, and at least a third layer which is a fiberglass or polyester"
11 [wherein] ... "at least one of them [, i.e., one of the layers] is in the form of
12 a mat, at least one is in the form of a scrim coated with a thermoplastic
13 adhesive, and at least a third layer is in the form of a mat or a scrim.
14 (O'Connor at 1:59-65).
- 15 15) O'Connor states that the layers may be bonded together using a
16 thermosetting adhesive "which may be applied to a scrim layer" before
17 laminating the other layers to the scrim layer. (O'Connor at 2:10-18).
- 18 16) Included among "preferred [thermosetting] adhesives for both fiberglass
19 and polyester non-woven adhesive bonded scrims" is "styrene butadiene
20 latex." (O'Connor at 65-68).
- 21 17) O'Connor further states that "thermosetting adhesives...may also be made
22 by adding thermosetting resins to thermoplastic resins (for example by

² US Patent number 4,539,254, issued on 3 September 1985.

1 adding a urea-formaldehyde resin to a styrene-butadiene latex)."
2 (O'Connor at 3:63-68).

3 18)Appellants did not separately argue for the patentability of any of
4 the claims and thus the claims stand or fall together as to each
5 rejection.

6 19)On the record before us, it is uncontested that "the amount of styrene-
7 butadiene and urea formaldehyde resin present in the binder and the
8 proportion of butadiene to styrene are result effective variables [such that]
9 as the styrene content increases, the binder becomes stiffer and is more
10 impact resistant". (Examiner's Answer (Answer) at 6).

11 III. Principles of law

12 In considering the rejections before us, we give the claims their broadest
13 reasonable interpretation consistent with the specification as that specification
14 would be interpreted by one of ordinary skill in the art. In re Morris, 127 F.3d
15 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). A limitation may not be
16 read into a claim from the specification, but it is appropriate to look to the
17 specification to define a limitation already in the claim. Elekta Instr. S.A. v.
18 O.U.R. Sci. Int'l, Inc., 214 F.3d 1302, 1307, 54 USPQ2d 1910, 1913 (Fed. Cir.
19 2000).

20 Where a product is claimed by the process used to make that product, the
21 claim, while "limited by and defined by the process" is directed to the product
22 itself. Thus, if the claimed product is the "same as or obvious from a product of
23 the prior art, the claim is unpatentable even though the prior product was made

1 by a different process." In re Thorpe, 777 F.2d 695, 697, 227 USPQ 964, 965,
2 (Fed. Cir. 1985). "Where a product-by-process claim is rejected over a prior art
3 product that appears to be identical, although produced by a different process,
4 the burden is upon the applicants to come forward with evidence establishing an
5 unobvious difference between the claimed product and the prior art product." In
6 re Marosi, 710 F.2d 799, 803, 218 USPQ 289, 292 (Fed Cir. 1983). "As a
7 practical matter, the Patent Office is not equipped to manufacture products by the
8 myriad of processes put before it and then obtain prior art products and make
9 physical comparisons therewith." Application of Brown, 459 F.2d 531, 535, 173
10 USPQ 685, 688 (CCPA 1972).

11 Discovery of an optimum or workable range through routine
12 experimentation does not impart patentability unless applicant shows that the
13 claimed range is critical, i.e., achieves unexpected results as compared to the
14 prior art range. In re Geisler, 116 F.3d 1465, 1569-70, 43 USPQ2d 1362, 1365
15 (Fed Cir. 1997); In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936
16 (Fed. Cir 1990).

17 *Enablement*

18 A specification "must teach those skilled in the art how to make and use
19 the full scope of the claimed invention without 'undue experimentation.'" PPG
20 Indus. Inc. v. Guardian Indus. Corp., 75 F.3d 1558, 1564, 37 USPQ2d 1618,
21 1623 (Fed. Cir. 1996).

22 "The test is not merely quantitative, since a considerable amount of
23 experimentation is permissible, if it is merely routine, or if the specification in

1 question provides a reasonable amount of guidance with respect to the direction
2 in which the experimentation should proceed to enable the determination of how
3 to practice a desired embodiment of the invention claimed." PPG Indus. Inc. v.
4 Guardian Indus. Corp., 75 F.3d 1558, 1564, 37 USPQ2d 1618, 1623 (Fed. Cir.
5 1996), citing with approval Ex parte Jackson, 217 USPQ 804, 807 (Bd. Pat. App.
6 1982).

7 IV. Analysis

8 35 USC §103(a)

9 The product claimed by Appellants at claim 1 is a "modified copolymer
10 latex binder" having a styrene-butadiene component and a urea-formaldehyde
11 component. As noted by the examiner, O'Connor teaches a thermosetting
12 adhesive made by adding a UF resin to SB latex. O'Connor does not teach the
13 following claim limitations:

- 14 (1) that the UF resin was prepared by adding a short stop agent to the
15 urea-formaldehyde resin "reaction system", nor
16 (2) the claimed proportions of UF to SB latex.

17 The patentability of a product does not depend on how it was made unless
18 the evidence shows that the manner of making the product as recited within the
19 claim results in a product that is patentably distinct from products made by the
20 prior art. In other words, if a claimed product is the same or obvious over a prior
21 art product, it does not matter that applicant made his product in a different way.
22 Thus, once the examiner directs applicant to prior art teaching a product that
23 reasonably appears to anticipate or render obvious the claimed product, then the

1 burden shifts to applicant to show that the process limitations make a difference,
2 i.e., yield a product that is patentably distinct from the prior art product. The
3 USPTO does not ignore the process limitations. However, as a practical matter
4 the USPTO is not in a position to undertake the necessary tests to determine
5 whether or not the process limitations make a difference.

6 In the situation before us, the examiner directs us to the O'Connor
7 product, a prior art product that reasonably appears to be the same as the
8 product claimed. We do not know how the prior art product, i.e., the UF resin,
9 was made since O'Connor does not say. As discussed infra, do not know, from
10 the record before us, if it matters that applicant may have made its UF resin in a
11 different way than the prior art UF resin was made. We note that neither the
12 claims nor the specification give very much information about how the UF resin is
13 made. For example, no particular short stop agent is recited nor are we told how
14 much and when short stop agent should be added.

15 By directing applicant to O'Connor and its teaching of SB/UF latex
16 binders, the examiner shifted the burden to Appellants to show that the process
17 limitation matters, i.e., that a patentably distinct product results because of the
18 use of the short-stop agent in forming the UF resin.

19 Appellants argue only that example 1 of the specification shows that the
20 process limitation does matter and in particular "that the short stopped UF resin
21 produces products having improved properties." (Appeal Brief ("Brief") at 6) and
22 that "the Examples clearly show the improved properties of a latex binder made
23 using a short-stopped UF resins versus one using a normal UF resin." (Reply

1 Brief at 5). Appellants do not further elaborate on how its “examples” show that
2 the claimed product is patentably distinct from the product of O’Connor.

3 The data at example 1 and reported at Table 1 do not persuade us that
4 the process limitations of claim 1 result in a product that is patentably distinct
5 from that of O’Connor. In particular, we are not persuaded that Table 1
6 represents a comparison between a product commensurate in scope with the
7 claimed product and a product representative of the O’Connor prior art product
8 (i.e., a product made without an expressly added short-stop agent). In re
9 Peterson, 315 F.d 1325, 1330-31, 65 USPQ2d 1379, 1383 (Fed. Cir. 2003).
10 Moreover, Appellants have failed to make any convincing argument that, even
11 had such a comparison been attempted, the results at Table 1 demonstrate the
12 type of results necessary to establish a patentable distinction.

13 Notably, Appellants do not explain why the “preferred emulsion” of “70
14 parts dry styrene/butadiene emulsion and 30 parts dry U/F resin [having] a solid
15 content of 45%, viscosity of less than 250 cps and a pH of 7.5 adjusted with
16 TEA^[3]” wherein the UF resins is “resin 2023-30 and is manufactured by Dynea
17 Corp...^[4]” is representative of the entire scope of the claimed subject matter.
18 Representative claim 1, for example, is directed to a latex binder having 10-
19 90wt% of each of the SB latex and the UF resin wherein the UF resin is prepared
20 using any short-stop agent. Moreover, Appellants do not explain why a

³ The specification states that “the modified latex copolymer is unstable unless the pH of the latex is adjusted to between 7.0 – 8.0 by a non-volatile alkaline agents such as sodium hydroxide and the like [preferably] triethanolamine.” (Specification at 8:6-8).

⁴ Representative claim 1 is not limited to a particular short stop agent. The record does not indicate if resin 2023-30 is representative of all short stopped UF resins. Moreover, as the examiner correctly notes, claim 1 is not limited to a concentration of short-stop agent. We do not know how much short-stopped agent is used to produce resin 2023-30 or whether the concentration used would make a difference in the supposedly unexpected results.

1 comparison of the "preferred emulsion" using a "Dynea UF resin" with an
2 emulsion made with an "other UF resin" is relevant since neither Appellants nor
3 the specification tell us how the "other UF resin" was made (e.g., was it made
4 using a different short stop agent or no short stop agent?). Even more to the
5 point, Appellants have not, either in the specification or on the record of the
6 prosecution, explained what are the properties of a resin "prepared by adding a
7 short-stop agent to the urea-formaldehyde resin reaction system" relative to a
8 non-short stopped UF resin. Moreover, there is no limitation as to the amount of
9 short-stop agent added or at what point in the reaction it must be added.

10 Finally, the results presented for the "preferred emulsion" at Table 1 are
11 not persuasive because their significance is not explained.⁵ The most notable
12 difference (i.e., 3 months versus 30 days) is seen in the "Stability at Room
13 Temperature" category, but only where TEA is used to adjust the pH of the
14 emulsion instead of ammonia. In fact, where ammonia is used to adjust the pH
15 instead of TEA, the emulsion having the "other UF resin" is reported to be stable
16 for 14 days at 35 degrees C versus only 7 days for the "Dynea UF resin"
17 emulsion.⁶ Thus, the properties of the "preferred emulsion", in this example, are
18 not as good as the "other UF resin" emulsion

⁵ For example, we are not told magnitude of viscosity change would have led to a conclusion that an emulsion is no longer stable.

⁶ While pH adjustment is not a process limitation of the claims, the specification acknowledges that if a "volatile agent such as ammonia" is used to adjust pH, "the resultant polymer will tend to set up after a few days whereas if the pH is adjusted with a non-volatile alkaline agent the latex is usually stable for three months or more at ambient temperature with no apparent increase in viscosity." (Specification at 8:6-12).

1 Table 2 does not represent a comparison of a short-stopped UF resin with
2 a non-short-stopped UF resin and thus is not relevant to whether the process
3 limitation results in a patentably distinct product.

4 As to the second distinction, it is undisputed on this record that it would
5 have been obvious to one having ordinary skill in the art to select the expansive
6 relative proportions, (1:0 to 9:1), of SB:UF claimed. Appellants have not directed
7 us to evidence establishing unexpected results or any other objective evidence of
8 non obviousness due to the claimed relative proportions of SB:UF. Appellants do
9 not take issue with the examiner's statement that "the amount of styrene-
10 butadiene and urea formaldehyde resin present in the binder and the proportion
11 of butadiene to styrene are result effective variables [such that] as the styrene
12 content increases, the binder becomes stiffer and is more impact resistant" and
13 thus Appellants have waived any argument to the contrary.

14 We note that the examiner has provided a teaching that SB/UF resin
15 combinations were recognized as thermosetting adhesives for roofing shingles.
16 The record also shows that UF resins, including short stopped resins, were
17 commercially available. Appellants have failed to demonstrate that using one of
18 these commercially available short-stopped UF resins in the known SB/UF
19 combination yields unexpected results sufficient to show that the claimed subject
20 matter would not have been obvious. We conclude that the binder of claim 1
21 would have been obvious.

22 For the preceding reasons, we AFFIRM the examiner's rejection of claims
23 1-10 under 35 USC §103(a).

35 USC §112, ¶ 1

1
2 Claim 1 requires the use of a short-stop agent to produce the UF resin
3 used in the claimed product. The examiner acknowledges that many short-stop
4 agents are known in the art. (Answer at 3-4). The examiner's concern is that the
5 specification provides only one example of a short-stop agent that may be used,
6 i.e., whatever short-stop agent was used to make "2023-30 by Dynea-Oy."
7 According to the examiner "the Appellant has provided no information of how
8 2023-30 is made and does not provide any information about the amount of
9 short-stop agent used, the time that the short-stop agent is added to the system
10 and has not provided any physical characteristics that would differentiate a
11 normal urea-formaldehyde polymer from a short-stopped-urea-formaldehyde (i.e.
12 chain length limitations)" and thus one skilled in the art would have had to
13 engage in undue experimentation to practice the claimed invention. (Answer at
14 4).

15 The examiner acknowledges that short-stop agents are known in the art
16 and that Appellants have provided an example of a short-stopped resin that can
17 be used in the claimed invention. The examiner argues that, but does not
18 provide any evidence that or reason why, the selection of a workable short-stop
19 agent would have required undue experimentation. The examiner argues that,
20 but again does not provide any evidence that or reason why, the selection of an
21 appropriate time to add the short-stop agent to the reaction would have required
22 undue experimentation. The disclosure informs one skilled in the art of the
23 particular use of the SB/UF resin binder being prepared and an example of a

workable, commercially available, short-stopped UF resin. The selection of other workable short-stop agents as well as the determination of an appropriate time to add the agent to the reaction appear to be matters of routine experimentation. Given the lack of evidence to the contrary, we are not persuaded that the examiner has established that the claims are properly rejected for lack of enablement. We REVERSE the examiner's rejection of the claims under 35 USC 112, ¶1.

8 V. Order

9 Upon consideration of the record and for reasons given, it is

10 ORDERED that the examiner's rejection of claims 1-10 under 35
11 USC ¶103 (a) is AFFIRMED, and

12 FURTHER ORDERED that the examiner's rejection of claims 1-10
13 under 35 USC §112, ¶1, is REVERSED.

14
15 AFFIRMED

/s/ Teddy S. Gron
TEDDY S. GRON
Administrative Patent Judge

/s/ Sally G. Lane
SALLY G. LANE
Administrative Patent Judge

/s/ Mark Nagumo
MARK NAGUMO
Administrative Patent Judge

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